

1 WHAT IS CLAIMED IS:

1 1. An isolated nucleic acid encoding an insect cell membrane  
2 transporter polypeptide;

3 wherein the insect cell membrane cell transporter is selected from the  
4 group consisting of: an acetylcholine transporter, a serotonin transporter, a proline  
5 transporter, a glutamate transporter, a neurotransmitter transporter encoded by the  
6 inebriated gene, an orphan transporter, and a LAT transporter;

7 wherein the polypeptide has greater than about 70% amino acid sequence  
8 identity to a polypeptide comprising a sequence selected from the group consisting of:  
9 SEQ ID NOS: 2, 4, 6, 8, 10, 12, and 16.

1 2. The isolated nucleic acid of the claim 1, wherein the nucleic acid  
2 encodes a polypeptide comprising a sequence selected from the group consisting of: SEQ  
3 ID NOS: 2, 4, 6, 8, 10, 12, and 16.

1 3. The isolated nucleic acid of claim 1, wherein the nucleic acid  
2 comprises a nucleotide sequence selected from the group consisting of: SEQ ID NOS: 1,  
3 3, 5, 7, 9, 11, and 15.

1 4. An isolated insect cell membrane transporter polypeptide, the  
2 polypeptide having greater than about 70% amino acid sequence identity to a polypeptide  
3 comprising a sequence selected from the group consisting of: SEQ ID NO: 2, 4, 6, 8, 10,  
4 12, and 16.

1 5. An isolated insect cell membrane transporter polypeptide of claim  
2 4, wherein the polypeptide comprises an amino acid sequence selected from the group  
3 consisting of: SEQ ID NO: 2, 4, 6, 8, 10, 12, and 16.

1 6. A method of screening for a compound which modulates activity of  
2 an insect cell membrane transporter, the method comprising the steps of:

- 3 a) contacting a recombinant cell with a test compound, wherein the  
4 recombinant cell comprises a recombinant nucleic acid  
5 expressing the insect cell membrane transporter, and  
6 b) determining the ability of the test compound to modulate activity of the  
7 insect cell membrane transporter, and

8 wherein said nucleic acid encoding the cell membrane transporter is  
9 selected from the group consisting of: SEQ ID NOS: 1, 3, 5, 7, 9, 11, and 15 and nucleic  
10 acids encoding the amino acid sequence of SEQ ID NOS: 2, 4, 6, 8, 10, 12, and 16.

1 7. The method of claim 6, wherein the cell is selected from the group  
2 consisting of: an insect cell, a mammalian cell, and a yeast cell.

1 8. A compound identified by the method of claim 6, wherein the  
2 compound modulates activity of an insect cell membrane transporter.

1 9. A method of screening for a compound which binds to an insect  
2 cell membrane transporter, the method comprising the steps of:

3 a) attaching an insect cell membrane transporter polypeptide to a  
4 solid surface; wherein the cell membrane transporter polypeptide is selected from the  
5 group consisting of: SEQ ID NOS: 2, 4, 6, 8, 10, 12, and 16; and

6 b) exposing the polypeptide to a test compound or a library of test  
7 compounds; and

8 c) determining the ability of the test compound or library of test  
9 compounds to bind to the cell membrane transporter.

1 10. A compound identified by the method of claim 9.

1 11. A cell comprising a recombinant nucleic acid encoding an insect  
2 cell membrane transporter polypeptide, the polypeptide having greater than 70% amino  
3 acid sequence identity to a polypeptide comprising a sequence selected from the group  
4 consisting of: SEQ ID NOS: 2, 4, 6, 8, 10, 12, and 16.

1 12. The cell of claim 11, wherein the cell is selected from the group  
2 consisting of: an insect cell, a mammalian cell, and a yeast cell.